

### Abstract

The present invention relates, *e.g.*, to a method for inducing arteriogenesis, lymphangiogenesis, vasculogenesis, or cardiomyogenesis, and/or for inducing mitosis or proliferation of a smooth muscle cell, a skeletal muscle cell, or a cardiomyocyte, comprising administering to a cell or tissue in need thereof a dose of a polynucleotide that encodes a vascular endothelial growth factor (VEGF), or that encodes a polypeptide comprising an active site of the VEGF. The coding sequence is operably linked to an expression control sequence; and the dose is sufficient to induce arteriogenesis, lymphangiogenesis, vasculogenesis, or cardiomyogenesis, and/or to induce mitosis or proliferation of a smooth muscle cell, a skeletal muscle cell, or a cardiomyocyte. In preferred embodiments of the invention, the method is a method of tissue regeneration, particularly of cardiomyogenesis; and the polynucleotide (or a polypeptide encoded by such a polynucleotide) is administered into the myocardium.

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